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ABSTRACT

The British Ability Scales (BAS), published in 1979 (after a national standardization on a representative sample of British children), were revised and republished in January 1983. The BAS is an individually administered cognitive test battery for children aged between 3 and 17 years. It has considerable breadth of test content and provides a greater degree of flexibility in use and a wider range of measurement facilities than in any previously published test battery. The major aim of the BAS is to provide diagnostic information on cognitive strengths and weaknesses, although it is possible, in addition, to calculate intelligence quotients. Innovations in content include scales based on theories of child development and cognitive theory. It has a number of technical innovations such as the use of Rasch scaling and expectancy tables. The BAS is not based restrictively on any single model or theory of intelligence or abilities, but is linked to the work of Piaget, Kohlberg, and Olver and Hornsby. Although a considerable amount of statistical information is provided in the technical handbook, the 23 scales have been primarily designed as a useful assessment test battery for the practitioner. (Author/PN)

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THE DEVELOPMENT OF THE BRITISH ABILITY SCALES (BAS)

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DEVELOPMENT OF THE BRITISH ABILITY SCALES : ABSTRACT

The British Ability Scales (BAS) have been produced over a 17 year period. First published in 1979, after a national standardisation on a representative sample of British children the 23 scales in the BAS have since been revised and the revised edition, together with introductory and technical handbooks is being published by the NFER-Nelson Publishing Co., Windsor, England, in January 1983.

The BAS is an individually administered cognitive test battery for children aged between $2\frac{1}{2}$ and $17\frac{1}{2}$ years. It has considerable breadth of test content and provides a much greater degree of flexibility in use and a wider range of measurement facilities than in any previously published test battery. The major aim of the BAS is to provide diagnostic information on cognitive strengths and weaknesses, although it is possible in addition to calculate IQ's. There are many innovations in content, including scales based on theories of child development and cognitive theory. It has a number of technical innovations such as the use of Rasch scaling and Expectancy Tables.

The BAS is not based restrictively on any single model or theory of intelligence or abilities. Although a considerable amount of statistical information is provided in the technical handbook, the scales have been primarily designed as a useful assessment test battery for the practitioner.

SYMPOSIUM: British Ability Scales : Research and Clinical Application.

PLACE AND TIME: Washington Hilton, 25th August 1982, 10.00 a m.

TITLE OF PAPER: The Development of the British Ability Scales (BAS)

PARTICIPANT: Colin D. Elliott, Ph. D., Principal investigator and primary author : British Ability Scales.

AFFILIATION: Department of Education,
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The British Ability Scales (BAS) have been produced over a seventeen year period. Financed by the British Government's Department of Education and Science, the project has received advisory support from the British Psychological Society. The project has been based at Manchester University, England. The BAS were first published in 1979. Since then, there have been a number of important improvements and revisions made to the test materials and the revised edition, together with the introductory and the technical manuals, is due for publication in January 1983.

Aims of the BAS.

The vision has been to produce a cognitive assessment test battery which would provide a much greater degree of flexibility in use and wider range of measurement facilities than in any previously published test battery.

Why is this necessary? Why do we need yet another individually administered cognitive test battery? It is because the tests previously used by psychologists and educators have often failed them (and the children being assessed) by not providing them with the detailed information which they need. It is because most traditionally constructed tests of this sort are relatively inflexible in use. They are aimed more at yielding IQs or other global scores than in providing detailed information about children's strengths and weaknesses in abilities across a range of cognitive domains. Such information is essential if our assessments are to pinpoint the nature of a child's learning difficulties, consequently leading to what should be the outcome of all assessments : helpful and practical suggestions for teachers, parents and others concerned with the

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education and care of the child. The vision has, therefore, been to bring a range of psychological theories and recent advances in test methodology to bear in producing something of direct, practical usefulness to psychologists and educators when carrying out cognitive assessments of children.

Standardization.

After a great deal of preparatory work, the BAS were standardized on a carefully and randomly selected sample of 3,435 children in Great Britain. All regions of England, Scotland and Wales were covered and the sample conformed very closely to population figures in terms of region, social class and urban/rural residence.

The Major Technical Features of the BAS.

The Rasch latent trait model of test scaling has been used as the basis for a number of the innovations in the BAS

The major features of the BAS may be summarised as follows:

*Twenty three separate scales. Designed to be used separately or in any combination with other scales.

*Scholastic Attainment Scales. Two of the twenty three scales are direct measures of scholastic achievement - the W ord Reading and Basic Number Skills Scales. This is a very unusual feature in a cognitive ability test battery.

*Developmental Scales. Two of the scales are based specifically on theories of child development. The Formal Operational Thinking Scale is based upon Piaget's work on the development of adolescent thinking. The Social Reasoning Scale is based upon Kohlberg's theory of the development of moral reasoning in children. Two other scales show the influence of developmental theories.

The Basic Number Skills Scale, particularly in its early items, is based upon number curricula commonly found in infant schools. These in turn are usually strongly linked to a Piagetian analysis of the development of children's number concepts. Finally, the Similarities

Scale has been influenced by the work of Olver and Hornsby on the development of concepts of equivalence in children.

*Sample-free Ability Measures. These are provided for the first time in any major cognitive test battery. They are based upon the use of the Rasch Model and provide the user as well as the test developer with a number of advantages.

*Normative Data. Centile norms (or percentiles) are provided for all scales, together with standardised score equivalents. Standardised scores are provided in T-score units, with a mean of 50 and a standard deviation of 10. In addition, age scores are provided for the two scholastic attainment scales of Word Reading and Basic Number Skills, since many test users commonly report such skills in terms of age equivalents.

*IQ estimates. Four types of IQ estimate are provided - General, Visual, Verbal, and Short-form. IQs are derived from various composites of scores on other BAS scales. They have a mean of 100 and a standard deviation of 15.

*Comparison of Standard Score Discrepancies. Users are enabled to perform two evaluations on any discrepancy between T-scores obtained on two scales. Firstly, tables of standard errors of score differences are provided which indicate whether or not a discrepancy of a given size could have occurred because of measurement error. Secondly it is possible to estimate the unusualness of a difference through the use of predicted scores, outlined below.

*Estimation of Predicted Scores. Users are enabled, on the basis of a given score on a particular scale (or on the basis of an IQ score), to predict a child's score on another scale. This procedure takes into account the "regression to the mean" effect found in comparing scores between two tests. The discrepancy between the score which the child actually obtains on the second test and the "predicted" score may then be evaluated. This provides an estimate of the unusualness of the discrepancy.

*Short Form Procedures. Short-form procedures are available for most of the individual scales, enabling the test user to obtain an ability estimate relatively quickly and economically and generally with a relatively small loss of precision. A Short-form IQ may also be calculated based on the composite of scores on four scales.

*Measurement of Change. The sample-free ability estimates enable objective measurement of growth or change in abilities over time.

*Identification of Unusual Response Patterns. The use of the Rasch Model enables unusual response patterns shown by a particular child on a particular scale to be identified.

*Further Test Development. Provision of Rasch item difficulties for each scale enables test users to develop new sets of items for a given scale easily and economically, if they so desire.

The Theoretical Basis of the BAS.

The BAS is not restrictively based on a single model or theory of intelligence or abilities. This is seen by the author as a strength rather than a weakness of the scales. The development of theories and models of human abilities has continued apace during the period of development of the BAS, and it is true to say that no single theory or model has come to be accepted by more than a small minority of psychologists as providing a satisfactory explanation of the phenomena of cognition. The BAS has, therefore, been constructed with many models and theories in mind. Many of the scales can readily be incorporated and interpreted within the framework of a range of existing models.

Technical Data.

Extensive analyses have been carried out and are reported in the Technical Manual. These include tests of goodness-of-fit to the

Rasch model, the detection of item bias related to sex and social class, reliability studies, correlational and principal component analyses and other criterion-related validity studies.

Conclusion.

It is hoped that this rapid survey will have provided some idea of the flexibility, range of measurement facilities and technical innovations in the BAS. I hope these will bear fruit in the instrument being of value to people : to psychologists, to teachers, and the children and young people whom they aim to help.